DTIC FILE COPY

Database on Minorities and Women in Science, Engineering, and Technology

Nina W. Kay

Huston-Tillotson College

DTIC
SELECTED
AUG 1 7 1988
D

for

Contracting Officer's Representative
Laurel W. Oliver

ARI Scientific Coordination Office, London
Milton S. Katz, Chief

Basic Research Laboratory
Michael Kaplan, Director

U. S. Army

Research Institute for the Behavioral and Social Sciences

July 1988

88 8 16 117

U. S. ARMY RESEARCH INSTITUTE

FOR THE BEHAVIORAL AND SOCIAL SCIENCES

A Field Operating Agency under the Jurisdiction of the

Deputy Chief of Staff for Personnel

EDGAR M. JOHNSON
Technical Director

WM. DARRYL HENDERSON
COL, IN
Commanding

Accession For

NTIS GRA&I	✓
DTIC TAB	☐
Unannounced	☐
Justification	

By

Distribution/

Availability Codes

| | Avail and/or |
| Dist | Special |

A-1

REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER ARI Research Note 88-67	**2. GOVT ACCESSION NO.** – –	**3. RECIPIENT'S CATALOG NUMBER** – –
4. TITLE (and Subtitle) DATABASE ON MINORITIES AND WOMEN IN SCIENCE, ENGINEERING, AND TECHNOLOGY		**5. TYPE OF REPORT & PERIOD COVERED** Interim Report September 85 - September 86
		6. PERFORMING ORG. REPORT NUMBER – –
7. AUTHOR(s) Nina W. Kay		**8. CONTRACT OR GRANT NUMBER(s)** MDA903-85-C-0342
9. PERFORMING ORGANIZATION NAME AND ADDRESS Huston-Tillotson College. Center for the Advancement of Science, Engineering, and Technology(CASET) 1820 East 8th Street, Austin, TX 78702		**10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS** 2Q161102B74F
11. CONTROLLING OFFICE NAME AND ADDRESS U.S. Army Research Institute for the Behavioral and Social Sciences, 5001 Eisenhower Avenue, Alexandria, VA 22333-5600		**12. REPORT DATE** July 1988
		13. NUMBER OF PAGES 45
14. MONITORING AGENCY NAME & ADDRESS(if different from Controlling Office) – – .		**15. SECURITY CLASS. (of this report)** Unclassified
		15a. DECLASSIFICATION/DOWNGRADING SCHEDULE n/a

16. DISTRIBUTION STATEMENT (of this Report)

Approved for public release; distribution unlimited.

17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)

– –

18. SUPPLEMENTARY NOTES

Laurel W. Oliver, contracting officer's representative
Marlin L. Ferral, co-contracting officer's representative after July 16, 1986.

19. KEY WORDS (Continue on reverse side if necessary and identify by block number)

American Indian	Technology	Hispanic
Asian American	Education	Careers.
non-traditional	Database	Science
Engineering	Education	Black.

20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

This research note discusses a database designed to be used as a resource in research on the education and careers of minority members and women in such quantitative fields as engineering, mathematics, physics, chemistry, computer sciences, and the environmental sciences. The references were selected after an extensive search, both computer and manual. The database contains 370 empirical studies on women and minority members, with variables identified and placed in categories. (OVER)

DD FORM 1473 EDITION OF 1 NOV 65 IS OBSOLETE

ARI RESEARCH NOTE 88-67

19. Abstract (continued)

The database was developed using INMAGIC software and is accessible by the use of keywords. At the present time, access is possible only through INMAGIC software, and this research note describes how to gain access in that fashion.

ii

DATABASE ON WOMEN AND MINORITIES IN SCIENCE,
ENGINEERING, AND TECHNOLOGY

CONTENTS

iii

DATABASE ON WOMEN AND MINORITIES IN SCIENCE, ENGINEERING, AND TECHNOLOGY

DESCRIPTION

The database prepared by CASET as a deliverable in the research project, "A Study to Determine and Test Factors Impacting Upon the Supply of Minority and Women Scientists, Engineers, and Technologists for Defense Industries and Installations" was delivered in print-out form. However, upon request CASET will furnish to ARI a computer tape, as provided for in the Contract MDA903-85-C-0342, page 3, to the following specifications:

> "9 Track 6250 bpi tape in either EBCDIC or ASCII format, plus record format containing values for each data element (including missing data codes). Each item (i.e. reference) shall constitute on "line". Each segment of the reference (e.g. author, title, date, etc.) shall constitute a separate field. The longest value shall determine the length of the field, with trailing blanks used to left justify the field."

The CASET database is currently online on a personal computer and is maintained by the INMAGIC database management system. The computerized system includes one record structure file, two printing format files, one data file with several hundred records, and one dictionary file, all in binary form. (Additionally, the system allows for the data file to be "dumped" into ASCII format quickly.) The entire data base management system is transferable via diskettes or magnetic tape, according to contract specifications, at any time. Furthermore, a paper copy of the coding information for each bibliographic citation is available. At the present time, access to the database is possible only through INMAGIC software.

It is anticipated that CASET field operations will be located at NASA/Johnson Space Center for a period of two years. For further information about obtaining a database tape, diskettes, or printouts, please contact:

Dr. Nina W. Kay, Principal Investigator
CASET
c/o NASA/Johnson Space Center
2101 NASA Road One
Houston, TX 77058
(713) 483-9315

1

HOW TO USE THE DATA BASE

I.   Entering The System

II. Making Changes/Addition/Deletions To The Data Base

III. Performing Search

I.   ENTERING THE SYSTEM

The personal computer can have several systems
stored on the hard disk, each with a separate
directory, e.g. Inmagic, the database management
system; WordPerfect, the word processing system; DOS,
the Disk Operating System; etc. To access the CASET
data base usually takes only one command after the "C
Prompt," C>.   (For the following examples, the
underlined print represents what the operator actually
types. Words in carets indicate special keys.)
     C> cd\inmagic <return>
The cd means change directories to the Inmagic
directory. When other systems have been used and a new
operator is switching to the data base, it will take
two commands after the "C Prompt."
     C> cd\inmagic <return>
     C> inmagic <return>
The display shows the first menu below:

INMAGIC version 7.0, release 1.0

Serial # 100101

Copyright (c) 1986, Inmagic Inc., Cambridge, Mass.

All rights reserved

_____MAIN MENU_____

SELECT	FILE
MAINTAIN	TEACH
DEFINE	CHANGE
AUXILIARY	EXIT

Enter choice (? for help):

The options select and maintain will be the only

2

items used. Maintain will be used for data entry, data
changes, or data deletions and is discussed in Part II.
Select will be used for performing searches and is
discussed in Part III. The operator chooses the option
by typing the first letter of the word selected and the
return. The computer responds with:
        Enter name of database file (up to 8 characters):
Type the name of the database, see below.
Enter name of database file (up to 8 characters):
        casentry <return>
The computer responds with:
        Enter Work File ID code:
Type the initial of your first name, see below.
        Enter Work File ID code: r <return>
This establishes a temporary computer file (work space)
for the operator to continue her work. The computer
displays different responses depending on the choice
selected. For details see Part II and Part III.
        When an assignment is finished, always select the
"exit" option by typing e and <return>. After two or
three of these "e's" have been typed, the computer will
respond once again with the "C Prompt." At this time,
do the following:
        C> del caset.srr (The last letter corresponds to
the initial entered as the work file id.) This command
deletes the temporary work space file.

II.   MAKING CHANGES/ADDITIONS/DELETIONS TO THE DATA
       BASE

        To ensure consistent data entry, mnemonic devices
have been selected to represent each factor. These
abbreviations are listed in Appendix A on a coding
sheet.   All data entered must conform to these
patterns! After entering Inmagic, the operator selects
the maintain option and return. A second sub-menu
appears on the screen as shown below:

_____INMAGIC - MAINTAIN Menu_____
        COMPOSE   LOG

        ADD   TEACH

        REMOVE   EXIT

        BUILD

_____

        Transaction log to screen. Enter L to change.

        Enter choice (? for help):

3

The proper category for changes, additions, and deletions is COMPOSE! Type c and <return>.
Enter choice (? for help): c <return>
The computer responds with the following:

INMAGIC - COMPOSE

Enter retrieval key:

ACC

A. Changes
    1. Type the desired accession number and return. It will take a while for the computer to find the file but then its contents will appear on the screen.
    2. Move the cursor to the desired field for the data change. (Move the cursor by using the four directional keys on the right side of the keyboard, pictured below.)

    | 7   8   9 |
    | 4   5   6 |
    | 1   2   3 |
    ----

    3. Delete incorrect data by using the back space delete key in the upper righthand corner of the keyboard. Enter the correction.
    4. Use function key 2, <F2>, located on the far lefthand side of the keyboard. The computer responds with a message about saving the file. This process takes about 2 minutes. The computer responds with the following:

INMAGIC - COMPOSE

Enter retrieval key:

ACC

If the work is completed, simply <return> and the sub-menu appears on the screen. Select the "exit" option by typing e and <return>. When the original menu appears, again select the exit option by typing e. The C Prompt should appear, and the operator is ready to delete the work space file.

4

B. Additions
    1. Enter the data base maintain and
        compose menus.
    2. Type the desired accession number
        and return. After a brief wait,
        the screen will display an empty
        file. See below:

                    INMAGIC - COMPOSE

ACC
DB/1
DR/1
AU/1
TI/1
SO/1
YR/1
SP/1
DT/1
AV/1
GO/1
OR/1
FU/1
EV/1
CO/1
ST/1
PC/1
CU/1
ED/1
CR/1
PE/1
EC/1
DA/1
CL/1
CA/1
VT/1
HS/1
COUNSELING/1
EXPECTATIONS/1
ROLE MODEL/1
RETENTION/1
RECRUITMENT/1
BARRIERS/1
SC/1
CC/1
WX/1
AB/1
AT/1
FINANCIAL SUPPORT/1
VA/1
MEASUREMENT/1
INTERVENTION/1

```
SEX BIAS/1
RACE BIAS/1
INTERNSHIP/1
SAT/1
GPA/1
MATH ANXIETY/1
MILITARY/1
SELF/1
VO/1
IS/1
PG/1
RN/1
CG/1
```

3. Type all the data and move the cursor by returning OR by using the four directional arrow keys on the righthand side of the keyboard. The correct order for data entry corresponds, for the most part, to the order on the coding sheet. See Appendix A for details of the abbreviations above.

4. To enter repeating fields, e.g. when educational factors has checks in several categories, do the following:

    ED/1 <u>Counseling acac mo</u> <F10>

    The computer responds with:

    ED/1 Counseling acac mo
    ED/2

    The computer inserts a new line called ED/2. The cursor will be positioned at the beginning of this new line and more data may be added. The F10 key may be used an infinite number of times! If an extra line is put in and there is no data for it, DO NOT worry. There is no way for the operator to delete it; just move the cursor to the next line and continue entering data. When the record is saved, the computer automatically deletes unused lines.

5. When all the data for that record has been entered, use the F2 key. The computer responds with a message about saving the file. This process takes about 2 minutes. The computer responds with the following:

INMAGIC - COMPOSE

Enter retrieval key:

ACC

     If the work is completed, simply <return> and the
sub-menu appears on the screen.   Select the "exit"
option by typing e and <return>. The original menu
appears and again select the exit option by typing e.
The C Prompt should appear and the operator is ready to
delete the work space file.

C.   Deletions
     1.   Enter the data base maintain and
          compose menus.
     2.   Type the   desired accession number
          and return.   After a brief wait,
          the screen will display a complete
          file.
     3.   Hold down the Control <CTRL> key
          and press d. The computer responds
          with the following at the bottom of
          the screen:
          Do you wish to delete this record (Y/N)?
          Type y, the screen goes blank. It
          takes about one minute to delete
          the record.   Then the computer
          responds with the following:

INMAGIC - COMPOSE

Enter retrieval key:

ACC

     If the work is completed, simply <return> and the
sub-menu appears on the screen.   Select the "exit"
option by typing e and <return>.   The original menu
appears and again select the exit option by typing e.
The C Prompt should appear and the operator is ready to
delete the work space file.

III. PERFORMING SEARCHES

     After entering Inmagic, the operator chooses the
select option and returns.   The screen goes blank
except for an asterisk (*) prompt, see below:

Enter command, or press RETURN for list of commands.

*

To proceed the operator types commands which direct the computer to retrieve certain records. The computer numbers each retrieval it performs and indicates the number of records found for each retrieval. Whenever the asterisk appears, the operator can type a new command.

In order to retrieve information, the operator must know which field contains the information desired. The list of fields is called the structure of the data base. (See Page 17 and Appendix A.) Some fields have mnemonic devices and others are complete words. The general syntax is:

* command   field name   verb   specific data,
* get   acc   =   000001

All commands may be abbreviated to their first letter so only, g acc=000001, retrieves the same file. Once the search is performed the computer responds with the following:

#1 number of records: 1

*

The operator may display or print the results of the search in any order desired by using the "by" option.

    *display by au <return>   OR   *d by au <return>
This command displays the previous search results alphabetically by author.

    When printing the results of a search, the operator must tell the computer what format to use in printing the output. Caset printouts use the "all" format.

    *print by au using all <return>   OR

    *p by au u all <return>
This command prints results of the search alphabetically by author using the format called "all."

    A variety of searches are possible with Inmagic using many verbs. Statements may contain the following:

    EQ or =   equals (shown above)
    LT or <   less than
    LE or <=   less than or equals
    GT or >   greater than
    GE or >=   greater than or equals
    ST   starts with (must use single or double quotes)

8

CW   contains word
CS   contains stem

The first five types of searches are self explanatory but be very careful with the inequalities. If the following command is typed in:

    * g acc ge 000010 <return>

The computer will end up getting over 900 records which takes about seven or eight minutes.

    The "starts with" search allows beginning phrases to locate an article.

    * g ti st "Women and minorities <return>

This command would retrieve the following articles:

    Women and Minorities in Science,
    Women and Minorities in Education,
    Women and Minorities Shock the Labor Market, etc.

    The "contains word" and "contains stem" search are very similar and will probably be used the most often. Both allow the use of only 1 word (not a phrase)!

    * g au cw johnson <return>

Note: Upper case letters are not required!
This retrieves all articles authored by anyone named Johnson. The difference between the two types of searches is in their scope. "Contains word" is a limited search. "Contains stem" allows retrieval of records that contain the base or root of a word.

    * g ti cs engineer <return>

This command retrieves articles like the following:

    Engineering is Popular Field,
    Engineers Pay Scale Declines,
    Woman Engineer Sues IBM,
    Academic Research Draws Many Engineers, etc.

    Searches may be further refined by using the Boolean algebra of "OR, AND, & NOT." "Or" retrieves the union of requests, and "And" retrieves the intersection of requests.

    * g acc=000010 or acc=000011 <return>

This command retrieves two files, numbers 10 and 11.

    * g ti cw science and ti cw engineering <return>

This command retrieves only articles which contain both the words science and engineering in their titles.

    "Not" is the exclusive command.

    * g au cw ernest not ti cw math <return>

This command retrieves all articles written by Ernest which do not have the word math in their title.

    Commands may also be spread over two or more lines:

    * g au cw johnson <return>

The computer responds with the following:

    #2 number of records: 5
    *

The operator now types:

    * and ti cs female <return>

9

The computer responds with the following:
     #2 number of records: 3
     *
The operator now types:
     * not st cw s <return>
The computer responds with the following:
     #2 number of records: 0
     No records found. Enter another command.
     *

This command retrieves all articles written by Johnson
with the word female or females in their title that are
primary studies (i.e. not secondary "s" studies). In
this case, no records were found.
     When exiting the select mode, type e after the
asterisk prompt. Oftentimes the computer responds with
the following:
Do you wish to store the search in progress (Y/N)?
Type n and <return>.   The screen displays the first
menu.   Select the exit option, and the workspace file
is ready to be deleted.

FIELD NAMES

ACC - Accession Number

DB - Database

DR - Date of Retrieval

AU - Author

TI - Title

SO - Source

YR - Year

SP - Sponsor

DR - Document Type

AV - Availability

GO - Goal and Focus

OR - Settings of Research

FU - Funding of Research

EV - Evaluation Component

CO - Cost Component

ST - Type of Study

PC - Population Characteristics

CU - Cultural Factors

ED - Educational Factors

CR - Career Factors

PE - Personal Factors

EC - Economic Factors

DA - Type of Data Used

CL - Measurement (College)

CA - Measurement (Career)

VT - Measurement (Vocational/Technical)

HS - Measurement (High School)

CN - Counseling

EX - Expectations

RO - Role_Model

RE - Retention

RC - Recruitment

BA - Barriers

SC - Scores

CC - Curriculum

WX - Work Experience

AB - Abilities

AT - Attitudes

FS - Financial_Support

VA - Values

ME - Measurement

IT - Intervention

SB - Sex_Bias

RB - Race_Bias

IR - Internship

SA - Sat

GP - GPA

MA - Math_Anxiety

MI - Military

SE - Self

VO - Volume

12

IS - Issue

PG - Pages

RN - Report Number

CG - Contract/Grant Number

EXAMPLES OF SEARCHES

NOTE: CW = Contains Word
           * is a machine prompt for a search request
           #5 is a machine prompt naming the results of
              a search

Documents on Black Females

* get PC cw Black   "PC" is the field name for
                     population characteristics.
#1 number of records: 98
* and PC cw F   "F" = Females.
#1 number of records: 49   49 Records have black
                                females.
* get DT cw Journal   "DT" is the field name for
                        document type.
#2 number of records: 381
* get #1 and #2   This intersects Journals with black
                     females.
#3 number of records: 21
* get DT cw Audio   Audio = Audiovisual material.
#4 number of records: 1
* get #1 and #4
#5 number of records: 0
No records found. Enter another command.
* get GO st 'Empirical   "GO" is the field name for
                          goal and focus, st = starts
                          with.
#5 number of records: 370
* get #1 and #5
#6 number of records: 39
* get YR cw 1982   "YR" is the field name for
year.
#10 number of records: 80
* get #1 and #10
#11 number of records: 3
* get SO st 'JournalofNegroEducation   "SO" is   the
                                        field name for
                                        source.
#13 number of records: 4
* get #1 and #13
#14 number of records: 3
* get OR cw Educational   "OR" is the field name
                              for research setting.
#3 number of records: 361
* get #1 and #3
#2 number of records: 34
* get CR cw TX   TX = Texas
#4 number of records: 1
* get #1 and #4
#6 number of records: 1

14

```
* get #2 and OR cw Multi        Multi        =        Multi-
                                institutional.

#13 number of records:  17
* get OR cw Industrial
#10 number of records:  23
* get #1 and #10
#11 number of records:  4
* get #1 and OR cw Governmental
#14 number of records:  1
* get #1 and FU cw public        "FU" is the field name
                                 for funding.

#15 number of records:  20
* get #1 and FU cw Corporate
#16 number of records:  1
*  et #1 and FU cw profit        Profit = Non-Profit
#17 number of records:  3
* get #1 and EV cw Yint          "EV" is the field name
                                 for evaluation, Yint =
                                 Yes    and    internal
                                 evaluation.

#18 number of records:  4
* get #1 and EV cw Yext          Yext = Yes and external
                                 evaluation.

#19 number of records:  0
No records found.  Enter another command.
* get #1 and CO st "Y            "CO" is the field name
                                 for cost component, Y =
                                 yes.

#19 number of records:  4
```

15

VARIABLES	BLACK FEMALES
Journal Articles	21
Audio-Visual Articles	0
Empirical Studies	39
1982 Publication Date	3
Source: Journal of Negro Education	3
Organizational Setting:	
Educational	34
Texas	1
Multi-institutional	17
Industrial	4
Governmental	1
Source of Funding:	
Public	20
Corporate	1
Non-Profit	3
Evaluation Component:	
Internal	4
External	0
Cost Component	4

Documents Containing Cultural Factors on American
Indian Males and Females

* get PC cw AmerIndian and PC cw M   AmerIndian =
                                            American
                                            Indian, M =
                                            Males.

#1 number of records: 14
* get PC cw AmerIndian and PC cw F
#2 number of records: 15
* get CU cw Counseling   "CU" is the field name for
                          Cultural Factors.

#3 number of records: 39
* get #1 and #3
#4 number of records: 1
* get #2 and #3
#5 number of records: 1
* get CU cw Expectations
#6 number of records: 108
* get #1 and #6
#7 number of records: 3
* get #2 and #6
#9 number of records: 3
* get CU cw Model   Model = Role Model
#9 number of records: 123
* get #1 and #9
#10 number of records: 6
* get #2 and #9
#11 number of records: 6
* get CU cw Retention
#12 number of records: 130
* get #1 and #12
#13 number of records: 5
* get #2 and #12
#14 number of records: 5
* get CU cw Recruitment
#15 number of records: 11
* get #1 and #15
#16 number of records: 0
No records found. Enter another command.
* get CU cw Barriers
#16 number of records: 242
* get #1 and #16
#17 number of records: 6
* get #17 and CU cw Diff   Diff   =   Differences
                               perceived in SET careers.

#18 number of records: 2
* get #17 and CU cw Race   Race = Race Bias
#20 number of records: 1
* get #2 and #16
#21 number of records: 7

17

```
* get #21 and CU cw Diff
#22 number of records:  2
* get #21 and CU cw Race
#23 number of records:  1
```

CULTURAL FACTORS

VARIABLES	AMERICAN INDIAN MALES	AMERICAN INDIAN FEMALES
Counseling	1	1
Expectations	3	3
Role Model	6	6
Retention	5	5
Recruitment	0	0
Barriers	6	7
Perceived Differences in SET Careers	2	2
Race Bics	1	1

Documents Containing Educational Factors on Hispanic
Males and Females

* get PC cw Hispanic and PC cw M
#1 number of records: 29
* get PC cw Hispanic and PC cw F
#2 number of records: 32
* get ED cw Counseling   "ED" is the field name for
                            Educational Factors.
#3 number of records: 242
* get #1 and #3
#4 number of records: 15
* get #2 and #3
#5 number of records: 17
* get ED cw Expectations
#6 number of records: 76
* get #1 and #6
#7 number of records: 11
* get #2 and #6
#8 number of records: 12
* get ED cw Model
#9 number of records: 231
* get #1 and #9
#10 number of records: 14
* get #2 and #9
#11 number of records: 15
* get ED cw Retention
#12 number of records: 189
* get #1 and #12
#13 number of records: 9
* get #2 and #12
#14 number of records: 10
* get ED cw Recruitment
#15 number of records: 150
* get #1 and #15
#16 number of records: 9
* get #2 and #15
#17 number of records: 10
* get ED cw Barriers
#18 number of records: 221
* get #1 and #18
#19 number of records: 19
* get #2 and #18
#20 number of records: 20
* get ED cw Scores
#21 number of records: 225
* get #1 and #21
#22 number of records: 15
* get #22 and ED cw SAT   SAT =   SAT/ACT   test
                               scores.
#23 number of records: 4

* get #22 and ED cw Spco   Spco = Special course/special test scores.

#24 number of records: 3
* get #1 and #21
#3 number of records: 15
* get #3 and ED cw GPA   GPA = Grade point average.

#4 number of records: 10
* get #3 and ED cw Rank   Rank = Rank in class.
#5 number of records: 2
* get #2 and #21
#6 number of records: 18
* get #6 and ED cw SAT
#7 number of records: 5
* get #6 and ED cw Spco
#8 number of records: 3
* get #6 and ED cw GPA
#9 number of records: 11
* get #6 and ED cw Rank
#10 number of records: 2
* get #1 and #14
#15 number of records: 2
* get ED cw Curriculum
#16 number of records: 350
* get #1 and #16
#17 number of records: 23
* get #2 and #16
#18 number of records: 26

21

EDUCATIONAL FACTORS

VARIABLES	HISPANIC MALES	HISPANIC FEMALES
Counseling	15	17
Expectations	11	12
Role Model	14	15
Retention	9	10
Recruitment	9	10
Barriers	19	20
Scores	15	18
SAT Test Scores	4	5
Special Test Scores	3	3
Grade Point Average	10	11
Class Rank	2	2
Curriculum	23	26

Documents Containing Career Factors on Women

```
* get PC cw F
#1 number of records:  396              -
* get #1 and CR cw Counseling      "CR"  is  the  field
                                   name    for   Career
                                   Factors.

#2 number of records:  13
* get #1 and CR cw Expectations
#3 number of records:  117
* get #3 and CR cw Jc    Jc    =    Job/career/family
                              expectations.
#4 number of records:  73
* get #3 and CR cw Opp   Opp = Advancement opportunity.
#5 number of records:  30
* get #1 and CR cw Model
#6 number of records:  26
* get #1 and CR cw Retention
#7 number of records:  93
* get #1 and CR cw Recruitment
#8 number of records:  50
* get #1 and CR cw Experience      Experience  ·  Work
                                   Experience.
#9 number of records:  57
* get #1 and CR cw Barriers
#10 number of records:  91
* and CR cw Sex     Sex = Sex Bias.  .
#10 number of records:  34
```

CAREER FACTORS

VARIABLES	ALL WOMEN
Counseling	13
Expectations	117
Job/Career/Family Expectations	73
Career Opportunities	30
Role Models	26
Retention	93
Recruitment	50
Work Experience	57
Barriers	91
Sex Bics	34

Documents Containing Personal Factors on Black Males
and Females

* get PC cw Black and PC cw M
#1 number of records: 46
* get PC cw Black and PC cw F
#2 number of records: 49
* get PE cw Ability   "PE" is the field name for
                         Personal Factors.
#3 number of records: 288
* get #1 and #3
#4 number of records: 17
* get #2 and #3
#5 number of records: 18
* get PC cw Attitudes
#6 number of records: 373
* get #1 and #6
#7 number of records: 33
* get #7 and PC cw Int   Int = Interest in SET.
#8 number of records: 11
* get #7 and PE cw Ms   Ms   =   Attitudes   toward
                         math/science.
#9 number of records: 11
* get #7 and PE cw Set   Set   =   Recognition   of   SET
                         objectives for a career.
#11 number of records: 6
* get #7 and PE cw Stud   Stud = Study habits.
#12 number of records: 4
* get #7 and PE cw Mot   Mot   =   Motivated   toward
                         achievement.
#13 number of records: 10
* get #7 and PE cw Self   Self = Self concept.
#14 number of records: 12
* get #2 and #6
#15 number of records: 33
* get #15 and PE cw Int
#16 number of records: 11
* get #15 and PE cw Ms
#17 number of records: 11
* get #15 and PE cw Set
#18 number of records: 6
* get #15 and PE cw Stud
#19 number of records: 4
* get #15 and PE cw Mot
#20 number of records: 10
* get #15 and PE cw Self
#21 number of records: 13
* get PE st "Expectation
#22 number of records: 25
* get #1 and #22
#23 number of records: 2

25

```
* get #2 and #22
#24 number of records:  2
* get PC cw Values
#3 number of records:  44
* get #1 and #3
#4 number of records:  0
No records found.  Enter another command.
* get #2 and #3
#4 number of records:  0
No records found.  Enter another command.
```

PERSONAL FACTORS

VARIABLES	BLACK MALES	BLACK FEMALES
Ability	17	18
Attitudes	33	33
Interest in SET	11	11
Math/Science Attitude	11	11
Recognition of SET objectives for career	6	6
Study Habits	4	4
Motivation to Achieve	10	10
Self Concept	12	13
Expectations	2	2
Values	0	0

Documents Containing Measurements of College, Vocational/Technical, and High School Variables

* get CL cw Rec   "CL" is the field name for College Measurement, Rec = Recruitment.

#4 number of records: 44
* get CL cw Ret   Ret = Retention.
#6 number of records: 38
* get CL cw Grad   Grad = Graduation.
#7 number of records: 45
* get CL cw Qual   Qual = Quality of life.
#8 number of records: 2
* get CA cw Rec   "CA" is the field name for Career Measurement.

#9 number of records: 21
× get CA cw Ret
#10 number of records: 18
* get CA cw Jobs   Jobs = Job satisfaction.
#11 number of records: 14
* get VT cw Rec   "VT" is the field name for Vocational/Technical Measurement.

#12 number of records: 2
* get VT cw Grad
#13 number of records: 2
* get VT cw qual
#14 number of records: 0
No records found. Enter another command.
* get HS cw Rec   "HS" is the field name for High School Measurement.

#14 number of records: 7
* get HS cw Grad
#15 number of records: 8
* get HS cw Qual
#16 number of records: 2
* get VT cw Drop   Drop = Drop out rate.
#1 number of records: 1
* get HS cw Drop
#2 number of records: 5

MEASUREMENT

	Recruitment	Retention	Graduation	Quality of Life/Job Satisfaction
College	4 4	3 8	4 5	2
Career	2 1	1 8	0	1 4
Vocational/ Technical	2	1	2	0
High School	7	5	8	2

29

APPENDIX A

CODING SHEET KEY

The following information is presented in the order data entry occurs under Inmagic's Maintain menu. The label of each field is listed first, next is the complete title associated with each field. Examples are displayed in some cases. The page numbers preceding sets of fields correspond to the coding sheet page numbers.

Coding Sheet - Page 1

ACC	Accession Number
DB/1	Data Base name, e.g. Eric
DR/1	Date of Retrieval, in most cases this refers to the date of the data base search.
AU/1	Author of article, e.g. Johnson BE
TI/1	Title
SO/1	Source of the article. In most cases this is the name of the journal.
YR/1	Year of publication, this field may include the month and date also.
SP/1	Sponsoring organization(s). Responses here indicate who funded the research.
DT/1	Document Type. These responses include one of the following: book, book chapter, journal, government report, industry report, dissertation, unpublished manuscript, conference paper, bibliography, audio-visual, instructional materials, manual or handbook, college report, and other.
AV/1	Availability. This information indicates where copies of the article may be obtained, e.g. Eric ED100000.

Coding Sheet - Page 2

GO/1   Goal and Focus. These responses include one of the following: empirical study, research review, theoretical review, position paper, anecdotal, case study, evaluation report, and other.

OR/1   Settings of Research. The amount of information listed in this field varies across documents. The first entry is either educational, industrial, governmental, or other. This is followed by the geographic location and name of the institution where study participants were found. If the institution is educational, any or all of the following is included: (1) public, private, or proprietary, (2) HS, AS, BS, MS, or PhD (indicating highest degree available), (3) Coed, F, or M (indicating the type of student body), (4) Rely or Reln, for religious affiliation, and (5) Tvy or Tvn, for technical/vocational institute. If the institution is governmental, civilian, military, or laboratory is included as a descriptor.

Coding Sheet - Page 3

FU/1   Funding of research. These include public, corporate, non-profit, other, or not specified.

EV/1   Evaluation component. Responses are yint, yext, or n, corresponding to yes-internal, yes-external and no.

CO/1   Cost component. All entries in this field are preceded by y, indicating yes. Total costs, unit costs, grant amounts, etc. are added.

ST/1   Type of study, either p for primary or s for secondary.

A-2

Coding Sheet - Page 4

PC/1   Population characteristics. These
            include   American   Indian
            (AmerIndian), Anglo, Asian American
            (AsianAm), Black, Hispanic, mixed
            minority (mixmin), mixed minority
            and other (mixmino), or other.
            Studies where the population is not
            specified has been coded mixmino.
            Other information entered is the
            number of males, females, or total
            if this is listed.

For the next five fields, factors are coded as
mentioned only (mo), unfavorable (unf), favorable
(fav), or intervention (int).   Each factor has
categories which are listed on the coding sheet; these
are entered below along with the abbreviated version
used for data base entry.

CU/1   Cultural factors.
            Counseling
                Consult Father   cf
                Consult Mother   cm
            Expectations
                Family expectations f
            Role Model
                Mother in related career   motc
                Father in related career   fatc
                Mother's educational level   mote
                Father's educational level   fate
            Retention
                Family moral support   fsup
            Recruitment
            Barriers
                Difference perceived in
                status of SET careers
                diff
                Sex Bias (no abbreviation)
                Race Bias (no abbreviation)

    Coding Sheet - Page 5

ED/1   Educational factors
            Counseling
                Academic counseling   acac
                Career   counseling
                matching individuals
                with majors   car
                Academic tutoring   acat
            Expectations

A-3

Role Model
    Teacher,   counselor,
    employer, professional
    role models   prof   -
Retention
    Support from authorities   asup
    Internships (no abbreviation)
    Peer support groups   psup
Recruitment
    Policies on women and minorities   pol
    Support from authorities   asup
Barriers
    Type of high school   hs
    Teacher qualifications   teach
    Sex Bias (no abbreviation)
    Race Bias (no abbreviation)
    Instructional materials   instr
Scores
    SAT/ACT   SAT
    Other specialized tests   test
    GPA (no abbreviation)
    Rank (no abbreviation)
Curriculum
    Adequate h/s math and science subjects
    hs
    Extra-curricular SET programs   xset
    Math Anxiety (no abbreviation)
    Other specialized courses   spco
    Extra-curricular non-SET   activities
    xnset

Coding Sheet - Page 7

CR/1   Career factors
        Counseling
        Expectations
            Job/career expectations   jc
            Advancement opportunity opp
        Role Model
            Mentor   men
        Retention
            Wages and salaries wage
            Advancement opportunity opp
            On the job peer support group   psup
        Recruitment
            Networking for job contacts   netw
        Work Experience
            Military (no abbreviation)
            Non-military   nmil
        Barriers
            Sex Bias (no abbreviation)
            Race Bias (no abbreviation)

A-4

Coding Sheet - Page 9

PE/1   Personal factors
Ability
     Skills for stress management   skill
     Aptitude   apt
     Hand/eye coordination   hec
     Male/female math and spatial differences
         spadif
     Adaptive capability   adapt
Attitudes
     Interest in SET   int
     Attitude toward math/science   ms
     Recognition of SET objectives for career
         set
     Study habits   stud
     Motivated toward achievement   mot
     Self-concept, image, self-confidence
         Self
Expectations
Values

Coding Sheet - Page 10

EC/1   Economic factors
Financial Support
     Grant   gr
     Scholarship   sc
     Internship (no abbreviation)
     Work Study   work
Barriers
     Financial support availability   avail
     Effect work on study time   work
     Sex Bias (no abbreviation)
     Race Bias (no abbreviation)

DA/1   Type of date used. Entries in this field are either cross-sectional (Cs), longitudinal (L), follow-up (FU), or meta-analysis.

CL/1   College Measurement. This information is recruitment (Rec), retention (Ret), dropout (Drop), stopout (Stop), graduation, (Grad), grade point average (Ga), quality of school life (Jal), change of attitude (Catt), transfers (Tran), or other.

A-5

Coding Sheet - Page 11

CA/1   Career   Measurement.   This
         information is recruitment (Rec),
         retention (Ret), length of service
         at individual company (Leng), job
         satisfaction (Jobs), or other.

VT/1   Vocational/Technical Measurement.
         This information is recruitment
         (Rec), dropout (Drop), graduation
         (Grad), grade average (Ga), quality
         of school life (Qual), or other.

HS/1   High School Measurement.   This
         information is recruitment (Rec),
         dropout (Drop), graduation (Grad),
         grade average (Ga), quality of
         school life (Qual), or other.

Coding Sheet - Page 12

The remaining fields are "check tags" for easier key
word searching. These fields have "x's" in place
whenever a factor has been coded in the earlier portion
of the coding sheet. In some fields no abbreviation is
used.

COUNSELING/1

EXPECTATIONS/1

ROLE MODEL/1

RETENTION/1

RECRUITMENT/1

BARRIERS/1

SC/1   Scores

CC/1   Curriculum

WX/1   Work Experience

AB/1   Abilities

AT/1   Attitudes

FINANCIAL SUPPORT/1

A-6

VA/1   Values

MEASUREMENT/1

INTERVENTION/1

SEX BIAS/1

RACE BIAS/1

INTERNSHIP/1

SAT/1

GPA/1

MATH ANXIETY/1

MILITARY/1

SELF/1

The remaining fields are coded on page 1 on the coding
sheet. These represent the only fields whose order
does not correspond to those on the coding sheet.

VO/1   Volume number of a journal.

IS/1   Issue number of a journal.

PG/1   Page numbers spanned by the document.

RN/1   Report number associated with document, if
            any.

CG/1   Contract/grant   number   associated   with
            document, if any.

A-7

APPENDIX B

CRITERIA FOR INCLUSION IN DATABASE

Categories A through D include the following:
- Membership in subgroup of American Indian, Asian American, Black, Hispanic, or women.
- United States of American citizenship.
- Published document, including bibliographies, presented papers, and government reports.

Additional criteria for each specific category must be:

A. Highest Criteria
    1. About a SET subject.
    2. About a ninth grade or above, postsecondary education, vocational training, or employment.

B. Second Highest Criteria
    1. Not about specific academic majors or occupation but is concerned with information or data about education, training, and jobs.
    2. About a ninth grade or above, postsecondary education, vocational training, or employment.

C. Third Highest Criteria
    1. About majors or occupations which are tangential to SET, such as the life sciences (medicine, biology, nutrition, paramedical training, dentistry); geography; meteorologist; heat-transfer technician; television; and radio repair person.
    2. About a ninth grade or above, postsecondary education, vocational training, or employment.

D. Fourth Highest Criteria
    1. About majors, courses of study, or occupations which are not SET or tangential to SET. Could be about subjects such as the social and behavioral sciences, law, business, English, foreign languages, and the non-SET trades.
    2. About a ninth grade or above, postsecondary education, vocational training, or employment.

E. Fifth Highest Criteria (useful for background or context only)
    1. About other subgroups, including Anglo males.
    2. About elementary and middle school.
    3. Contains general information about one of the subgroups, not particularly related to education, training, or occupation.
    4. Contains data or comparison of education and employments of SETs or subgroups internationally.
    5. About impact of historic, political, economic, social, and cultural forces.

F. Not relevant at all.

APPENDIX C

THESAURUS HIERARCHY

Ability
      Intervention

AmerIndian

Anglo

AsianAm

Attitudes
      Intervention
      Self
            Intervention

Barriers
      Intervention
      Race Bias
      Sex Bias

Black

Career Factors
      Barriers
            Intervention
            Race Bias
            Sex Bias
      Counseling
            Intervention
      Intervention
      Expectations
            Intervention
      Military
      Race Bias
      Recruitment
            Intervention
      Retention
            Intervention
      Role Model
            Intervention
      Sex Bias
      Work Experience
            Intervention
            Military

Counseling
      Intervention

Cultural Factors
    Barriers
        Intervention
        Race Bias
        Sex Bias
    Counseling
        Intervention
    Expectations
        Intervention
    Intervention
    Race Bias
    Recruitment
        Intervention
    Retention
        Intervention
    Role Model
        Intervention
    Sex Bias

Curriculum
    Intervention
    Math Anxiety

Economic Factors
    Barriers
        Intervention
        Race Bias
        Sex Bias
    Financial Support
        Internship
        Intervention
    Internship
    Intervention
    Race Bias
    Sex Bias

Educational Factors
    Barriers
        Intervention
        Race Bias
        Sex Bias
    Counseling
        Intervention
    Curriculum
        Intervention
        Math Anxiety
    Expectations
    Grade Point Average (GPA)
    Internship
    Intervention
    Math Anxiety

C-2

```
                    Intervention
              Race Bias
              Recruitment
                    Intervention
              Retention
                    Internship
                    Intervention
              Role Model
                    Intervention
              SAT (test scores)
              Scores
                    Grade Point Average (GPA)
                    Intervention
                    SAT (test scores)
              Sex Bias

    Expectations
          Intervention

    Financial Support
          Internship
          Intervention

    Grade Point Average (GPA)

    Hispanic

    Internship
          Intervention

    Intervention

    Math Anxiety
          Intervention

    Measurement

    Military

    Personal Factors
          Ability
                Intervention
          Attitudes
                Intervention
                Self
          Expectations
          Intervention
          Self
          Values
```

Population Characteristics
    AmerIndian
    Anglo
    AsianAm
    Black
    Hispanic

Race Bias
    Intervention

Recruitment
    Intervention

Retention
    Intervention

Role Model
    Intervention

SAT (test scores)
    Intervention

Scores
    Grade Point Average (GPA)
    Intervention
    SAT (test scores)

Self
    Intervention

Sex Bias
    Intervention

Values

Work Experience
    Intervention
    Military